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CHECKLIST

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Checklist of the familes Chaoboridae, Dixidae, Thaumaleidae, Psychodidae and Ptychopteridae (Diptera) of Finland

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Abstract

A checklist of the families Chaoboridae, Dixidae, Thaumaleidae, Psychodidae and Ptychopteridae (Diptera) recorded from Finland is given. Four species, *Dixella dyari* Garret, 1924 (Dixidae), *Threticus tridactilis* (Kincaid, 1899), *Panimerus albifacies* (Tonnoir, 1919) and *P. przhiboroi* Wagner, 2005 (Psychodidae) are reported for the first time from Finland.

Keywords

Finland, Diptera, species list, biodiversity, faunistics

Introduction

Psychodidae or moth flies are an intermediately diverse family of nematocerous flies, comprising over 3000 species world-wide (Pape et al. 2011). Its taxonomy is still very unstable, and multiple conflicting classifications exist (Duckhouse 1987, Vaillant 1990, Ježek and van Harten 2005). The nomenclature used in the Finnish check-list follows the

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Norwegian one (Kvifte et al. 2011). For differences between the taxonomy used herein and that used in previous works on Finnish Psychodidae (e.g. Hackman 1980, Salmela 2003, 2005, Salmela et al. 2007, Autio and Salmela 2010) see Kvifte et al. (2011). Two species, *Pneumia nubila* and *Pneumia palustris*, listed in the previous check-lists by Hackman (1980) and Wagner (2013) have not been confirmed through study of material. Of these, *P. palustris* have been suggested to be synonymous with *Pneumia gracilis* (Eaton, 1893) (Withers 1989). Both these species have been linked to some taxonomic confusion in the past, and thus the record of *P. nubila* may represent *Pneumia trivialis*. The present check-list contains the first Finnish records of the species *Threticus tridactilis* (Kincaid, 1899), *Panimerus albifacies* (Tonnoir, 1919) and *P. przhiboroi* Wagner, 2005 (see Notes).

Finnish Psychodidae are very well studied compared to other Nordic countries, however new species are still being discovered at a regular rate. Most of these are new country records, but in recent years the fauna has also yielded some species new to science (Salmela et al. 2012, Kvifte unpubl.). This trend is likely to continue. Probably between twelve and thirty further species can be expected to be found in the Finnish fauna. There are no good identification sources available for Psychodids, as all works suffer from taxonomic or nomenclatural errors and/or insufficient descriptions. The best works relevant to the Finnish fauna are Vaillant (1971-1983), Withers (1989) and Wagner (1997c, genera only).

Phantom midges (Chaoboridae) are close relatives to mosquitoes (Culicidae) and meniscus midges (Dixidae) (Saether 1970, 1997). There are around 50 known species of phantom midges in the world and 15 in the palearctic region, of which five are holoarctic species. In Finland, there are eight species in three genera (Hirvenoja 1960, Hackman 1980, in which the species in the genus *Mochlonyx* were still doubtful).

The only strictly lacustrine species in Finland is *Chaoborus flavicans*. The other species live in small fishless lakes, ponds and springs where their predators are mainly dragon flies, dytiscid beetles and frogs. *Chaoborus nyblaei* and *Cryophila lapponica* are found from small fishless ponds on fells and ponds created by melting water. However, in 2013 larvae of *C. nyblaei* were found from the boreal zone, NE Lapland (Savukoski) from a small but permanent pond. *Chaoborus pallidus* lives in eutrophic lakes and small lakes in southern and central Finland (Hirvenoja 1960, 1963, Paasivirta 2002). However, there have not been any systematic surveys of the fauna across the biogeographic provinces and the conservation statuses of the species have not been evaluated. Finnish species can be identified by using Saether (1997, 2002).

Meniscus midges (Dixidae) belong to infraorder Culicomorpha. There are nearly 200 known species of which 53 occur in the Palaearctic region. In Finland two genera and 16 species are present (Hackman 1980, Salmela 2003, Salmela et al. 2007). One species (*Dixella dyari* Garret, 1924) is reported here for the first time from Finland (see Notes). Larvae of meniscus midges dwell in or slightly above water meniscus, having a characteristic U-shaped position (Wagner 1997a). Members of the genus *Dixella* are associated with lentic or slow flowing waters, such as ponds, lake shores and bog pools. Species of the genus *Dixa* are lotic, dwelling in running waters of varying size. Two Finnish species, *Dixa dilatata* and *D. submaculata* prefer springs and spring brooks. The Finnish fauna is generally rather well known, although three species have hitherto

Table 1. Number of species by family.

Family	Number of species in			Level of knowledge
	World (Pape et al. 2011)	**Europe**	**Finland**	
Psychodomorpha:				
Psychodidae	2958	493	61–63	average
Culicomorpha:				
Chaoboridae	54	9	8	good
Dixidae	186	32	16	average
Thaumaleidae	182	76	1	good
Ptychopteromorpha:				
Ptychopteridae	69 (Wagner et al. 2008)	14	7	good

been collected from single localities. One northern *Dixa* species close to *D. dilatata* is still undescribed. A majority of the species can be identified by using Martini (1928), Peus (1934, 1936), Vaillant (1967) and Disney (1999).

Trickle midges (Thaumaleidae) is a small family belonging to infraorder Culicomorpha. Globally, nearly 200 species are known of which 76 are European. Central European mountains harbor a rich assemblage of trickle midges (Wagner 2002), at least if compared to the poor diversity (5 spp.) in Fennoscandian area (Wagner 1997b, Andersen et al. 2013). Only one species, *Thaumalea truncata*, has been hitherto recorded from Finland (see the discussion in Andersen et al. 2013). Larvae of trickle midges dwell on hygropetric substrates or splash zones of running waters (Wagner 1997b). *Thaumalea truncata* occurs mainly in northern Finland, both boreal and subarctic ecoregions, and adult specimens have been caught around springs and headwater streams (Salmela 2003, Salmela 2008).

Phantom crane flies (Ptychopteridae) belong to infraorder Ptychopteromorpha, being a sister group of Psychdomorpha and Culicomorpha (Wiegmann et al. 2011). Ptychopteridae is a small family with over 69 species in the world and 14 in Europe. Seven species are known from Finland, all belonging to the genus *Ptychoptera*. Only one Finnish species, *Ptychoptera minuta*, is widespread, locally abundant and almost ubiquitous. Other species are much less frequent, occurring in peatlands, headwater streams, springs and swamps. Adult *Ptychoptera* superficially resemble Tipuloidea crane flies, being slender and having long legs. Larvae of *Ptychoptera* live in shallow aquatic habitats, usually in soft substrates (Andersson 1997). Finnish species can be identified by using Andersson (1997) and Krzeminski (1986).

Checklist

Nematocera Dumeril, 1805
infraorder Psychodomorpha Hennig, 1968

PSYCHODIDAE Newman, 1834
PSYCHODINAE Newman, 1834

tribe Pericomaini Enderlein, 1935
PARABAZARELLA Vaillant, 1983
Parabazarella subneglecta (Tonnoir, 1922)
BERDENIELLA Vaillant, 1976
Berdeniella freyi (Berdén, 1954)
CLYTOCERUS Eaton, 1904
sg. *Boreoclytocerus* Duckhouse, 1978
Clytocerus ocellaris (Meigen, 1818)
Clytocerus rivosus (Tonnoir, 1919)
Clytocerus tetracorniculatus Wagner, 1977
PERICOMA Walker, 1856
sg. *Pachypericoma* Vaillant, 1978
Pericoma blandula Eaton, 1893
Pericoma nielseni Kvifte, 2010
= *formosa* Nielsen, 1964 (preocc. Meunier, 1905)
sg. *Pericoma* Walker, 1856
Pericoma rivularis Berdén, 1954
PNEUMIA Enderlein, 1935
Pneumia borealis (Berdén, 1954)
Pneumia bucegica (Vaillant, 1981)
Pneumia mutua (Eaton, 1893)
? *Pneumia nubila* (Meigen, 1818)
? *Pneumia palustris* (Meigen, 1818)
Pneumia pilularia (Tonnoir, 1940)
Pneumia stammeri (Jung, 1954)
Pneumia trivialis (Eaton, 1893)
Pneumia ussurica (Wagner, 1994)
ULOMYIA Walker, 1856
Ulomyia cognata (Eaton, 1893)
Ulomyia fuliginosa (Meigen, 1804)
tribe Psychodini Newman, 1834
PHILOSEPEDON Eaton, 1904
Philosepedon balkanicus Krek, 1970
Philosepedon humeralis (Meigen, 1818)
Philosepedon soljani Krek, 1971
PSYCHODA Latreille, 1796
Psychoda albipennis Zetterstedt, 1850
= *parthenogenetica* Tonnoir, 1940
Psychoda alternata Say, 1824
Psychoda brevicornis Tonnoir, 1940
Psychoda buxtoni Withers, 1988
Psychoda cinerea Banks, 1894

Psychoda crassipenis Tonnoir, 1940
Psychoda cultella Salmela, Kvifte & More, 2012
Psychoda erminea Eaton, 1898
Psychoda gemina (Eaton, 1904)
Psychoda grisescens Tonnoir, 1922
Psychoda itoco Tokunaga & Komyo, 1955
Psychoda lativentris Berdén, 1952
Psychoda lobata Tonnoir, 1940
Psychoda minuta Banks, 1894
Psychoda phalaenoides Linnaeus, 1758
Psychoda satchelli Quate, 1955
Psychoda setigera Tonnoir, 1922
Psychoda trinodulosa Tonnoir, 1922
Psychoda uniformata Haseman, 1907
THRETICUS Eaton, 1904
Threticus tridactilis (Kincaid, 1899)
TRICHOPSYCHODA Tonnoir, 1922
Trichopsychoda hirtella (Tonnoir, 1919)
tribe Maruinini Enderlein, 1937
LOBULOSA Szabo, 1960
Lobulosa pollex (Berdén, 1954)
TONNOIRIELLA Vaillant, 1971
Tonnoiriella nigricauda (Tonnoir, 1919)
tribe Mormiini Enderlein, 1937
***MORMIA* Enderlein, 1935**
Mormia niesiolowskii Wagner, 1985
Mormia strobli (Ježek, 1986)
tribe Paramormiini Enderlein, 1937
PARAJUNGIELLA Vaillant, 1972
Parajungiella consors (Eaton, 1893)
Parajungiella ellisi (Withers, 1987)
Parajungiella pseudolongicornis Wagner, 1975
LEPISEODINA Enderlein, 1937
Lepiseodina rothschildi (Eaton, 1912)
PANIMERUS Eaton, 1913
sg. *Panimerus* Eaton, 1913
Panimerus albomaculatus (Wahlgren, 1904)
Panimerus notabilis (Eaton, 1893)
sg. *Psycmera* Ježek, 1984
Panimerus albifacies (Tonnoir, 1919)
Panimerus intellegus (Jung, 1956)
Panimerus przhiboroi Wagner, 2005

PARAMORMIA Enderlein, 1935
Paramormia polyscoidea (Krek, 1970)
Paramormia ustulata (Walker, 1856)
PERIPSYCHODA Enderlein, 1935
Peripsychoda auriculata (Curtis, 1839)
Peripsychoda fusca (Macquart, 1826)
TELMATOSCOPUS Eaton, 1904
Telmatoscopus advena (Eaton, 1893)
Telmatoscopus similis Tonnoir, 1922
SYCORACINAE Rondani, 1856
SYCORAX Haliday in Curtis, 1839
Sycorax silacea Haliday in Curtis, 1839
infraorder Culicomorpha Hennig, 1948
superfamily Culicoidea Meigen, 1818

CHAOBORIDAE Newman, 1834
CHAOBORUS Lichtenstein, 1800
sg. *Chaoborus* Lichtenstein, 1800
Chaoborus crystallinus (De Geer, 1776)
Chaoborus flavicans (Meigen, 1830)
Chaoborus obscuripes (van der Wulp, 1859)
sg. *Peusomyia* Sæther, 1970
Chaoborus pallidus (Fabricius, 1794)
sg. *Schadanophasma* Dyar & Shannon, 1924
Chaoborus nyblaei (Zetterstedt, 1838)
CRYOPHILA Edwards, 1930
Cryophila lapponica (Martini, 1928)
MOCHLONYX Loew, 1844
Mochlonyx fuliginosus Felt, 1905
= *M. martinii* Edwards, 1930
= *M. velutinus* of authors
Mochlonyx velutinus (Ruthe, 1831)
= *M. culiciformis* (De Geer, 1776) preocc.

DIXIDAE Schiner, 1868
DIXA Meigen, 1818
Dixa dilatata Strobl, 1900
Dixa nebulosa Meigen, 1830
Dixa puberula Loew, 1849
Dixa submaculata Edwards, 1920
DIXELLA Dyar & Shannon, 1924
Dixella aestivalis (Meigen, 1818)
Dixella amphibia (De Geer, 1776)

Dixella autumnalis (Meigen, 1838)
Dixella borealis (Martini, 1928)
Dixella dyari (Garret, 1924)
Dixella filicornis (Edwards, 1926)
Dixella hyperborea (Bergroth, 1889)
Dixella laeta (Loew, 1849)
Dixella naevia (Peus, 1934)
Dixella nigra (Staeger, 1840)
Dixella obscura (Loew, 1849)
Dixella serotina (Meigen, 1818)

THAUMALEIDAE Bezzi, 1913
THAUMALEA Ruthe, 1831
Thaumalea truncata Edwards, 1929

infraorder PtychopteromorphaWood & Borkent, 1986
superfamily Ptychopteroidea Osten Sacken, 1862

PTYCHOPTERIDAE Osten Sacken, 1862
PTYCHOPTERA Meigen, 1803
sg. *Paraptychoptera* Tonnoir, 1919
Ptychoptera lacustris Meigen, 1830
Ptychoptera paludosa Meigen, 1804
sg. *Ptychoptera* Meigen, 1803
Ptychoptera albimana (Fabricius, 1787)
Ptychoptera contaminata (Linnaeus, 1758)
Ptychoptera hugoi Tjeder, 1968
Ptychoptera minuta Tonnoir, 1919
Ptychoptera scutellaris Meigen, 1818

Excluded species

Dixa maculata Meigen, 1818. There is one female specimen collected from Russia, Kantalaks (=Kandalaksha) that belongs to *Dixella borealis*.

Notes

Threticus tridactilis: Ostrobotthnia borealis pars borealis, Rovaniemi, Nammalikkokivalo, 13.6.–11.7.2004, J. Salmela leg.; Regio kuusamoensis, Taivalkoski, Poikaloukusanoja, 1.6.–1.7.2006, J. Salmela leg.; Regio kuusamoensis, Taivalkoski, Syväoja 1.6.-1.7.2006, J. Salmela leg.

Panimerus albifacies: Regio aboensis, Turku, Pomponrahka-Isosuo mire conservation area, 1.8.–28.9.2011, J. Salmela & E. Nummela leg.

Panimerus przhiboroi: Ostrobotthnia borealis pars borealis, Tervola, Ruuttulammi conservation area, 4.6.–2.7.2012 J. Salmela leg. (New for European fauna)

Psychoda albipennis Zetterstedt has been confirmed to occur in Finland by Bo-W. Svensson (female specimen from Tavastia australis, South Finland, Tampere, 2009, J. Salmela leg.).

Dixella dyari: Lapponia enontekiensis, Enontekiö, Pallas-Yllästunturi National Park, Lumikero E, 25.8.2010, J. Salmela leg.

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